REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of March 10, 2004. In the Official Action, Claims 1-9 and 20-27 stand rejected under 35 U.S.C. 103(a) based at least in part on U.S. Patent No. 6,411,655 to Holden et al. (Holden). As discussed below, at the time the present invention was made, both the Holden patent application and the present application were owned by the same entity. As such, a statement by Applicants' representative to that effect is included with this Amendment, which should remove Holden as prior art under 35 U.S.C. 103(c) and therefore overcome these rejections.

The remaining claims stand rejected under 35 U.S.C. § 103(a) based at least in part on U.S. Patent No. 6,631,254 to Wilson et al. ("Wilson"). However, as discussed below, Wilson does not disclose what the Official Action indicates, and a skilled artisan would not have been motivated to combine Wilson as suggested in the pending rejections. Accordingly, the rejections of Claims 10-19 and 28-36 should also be withdrawn.

Applicants have also amended the Abstract to delete the title, thereby overcoming the objection to the specification. In light of the above, Applicants respectfully submit that all of the issues raised in the March 10, 2004 Official Action have been addressed and that the present application is now in condition for allowance.

I. The Rejections of Claims 1-9 and 20-27 Should Be Withdrawn in Light of Applicants' Statement of Common Ownership

Claims 1, 3-9, 20 and 22-27 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Holden. Claims 2 and 21 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Holden in combination with U.S. Patent No. 5,313,173 to Lampe ("Lampe"). The application of Holden was filed on December 18, 1998 and issued on June 25, 2002. The present application was filed on December 22, 2000. Therefore, Holden is only prior art to the present application under 35 U.S.C. § 102(e).

Section 4807 of the American Inventors Protection Action of 1999, which was enacted November 29, 1999, amended Section 103(c) to recite:

> Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f) and (g) of Section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed

> invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

35 U.S.C. § 103(c). Furthermore, Section 4807 states that the amendment "shall apply to any application for patent filed on or after the date of the enactment of this Act." S 1948 IS Section 4807. Thus, since the present application was filed subsequent to November 29, 1999, 35 U.S.C. § 103(c) applies to the present application.

At the time the present invention was made, the entire rights to the subject matter of Holden and to the invention claimed in the present application were commonly owned by, and/or subject to an obligation of assignment to, Telefonaktiebolaget L.M. Ericsson Telefonplan. In particular, the subject matter of the present application was owned by and/or subject to an obligation of assignment to Telefonaktiebolaget L.M. Ericsson Telefonplan at the time the invention was made, and an assignment conveying such ownership rights was filed concurrently with the filing of the present patent application. This assignment was recorded on December 22, 2000 at Reel 01142, Frame 0852. The subject matter claimed in Holden was either under an obligation of assignment to Ericsson, Inc. or had already been assigned to Ericsson, Inc. at the time the present invention was made. The assignment confirming ownership by Ericsson, Inc. in the subject matter of Holden was recorded on December 18, 1998 at Reel 9684, Frame 0488. Ericsson, Inc. is a wholly-owned subsidiary of Telefonaktiebolaget L.M. Ericsson Telefonplan and was so at the time the present invention was made. Therefore, the subject matter of Holden and the subject matter of the claimed invention were, at the time the invention was made, "owned by the same person or subject to an obligation of assignment to the same person." (*See, e.g.*, M.P.E.P. § 706.02(l)(2), Example 1, noting that the ownership rights may be through 100% ownership of a subsidiary corporation). As such, under 35 U.S.C. § 103(c), Holden may not be applied as Section 103 prior art against the present application, and the rejections of Claims 1-9 and 20-27 should be withdrawn.

Applicants also wish to note that they are not conceding that Claims 1-9 and/or 20-27 are obvious in view of Holden taken alone or in combination with Lampe. However, since Holden is simply not prior art under U.S. law, such considerations are moot.

II. Claims 10-19 and 28-36 are Patentable

Claims 10, 12, 16-19, 28, 30 and 34-36 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Wilson. Claims 11 and 29 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Wilson in combination with Lampe. Claims 13-15 and 31-33 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Wilson in combination with U.S. Patent No. 6,671,337 to Cordoba ("Cordoba").

Three criteria must be met order to establish a *prima facie* case of obviousness. First, the combined prior art references must teach or suggest *all* of the claim limitations. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Finally, there must be a reasonable expectation of success of the combination. The evidence of both the teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not in the applicant's disclosure. *See* M.P.E.P. § 2143. Moreover, the evidence of the teaching or suggestion to combine the references must be *clear and particular*, and must provide a reason why a skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *See In re Dembiczak*, 50 USPQ2.d 1614, 1617 (Fed. Cir. 1999); *In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000).

Claims 10-19 are directed to a modulation system which includes a "quadrature modulator [that] is included within [a] phase locked loop" and Claims 28-36 are each directed to a modulation method "wherein the modulating is performed within the phase locked loop." The Official Action admits that Wilson does not "expressly disclose" that "the quadrature modulator is included within the PLL [phase locked loop]." (Official Action, p. 9). However, the Official Action takes the position that "[o]ne of ordinary skill in the art will appreciate that the quadrature modulator could be considered to be part of the PLL." (Official Action, p. 9). Applicants respectfully submit, however, that the system disclosed in Wilson does not teach or suggest including the quadrature modulator within the phase locked loop. Therefore, the cited combination of references fails to teach all of the recitations of any of Claims 10-19 or 28-36 and, as such, the rejections of Claims 10-19 and 28-36 should also be withdrawn.

In particular, the Official Action states that phase detector 6, voltage controlled oscillator 8 and pre-driver 9 comprise the phase locked loop. (Official Action at 9). As is shown in Fig. 1, the feedback portion of the loop also includes an offset mixer 18 and a limiter 19, the output of which is used as the second input to phase detector 6. As is clearly shown in Fig. 1, the quadrature modulator, which comprises mixers 2a, 2b, phase splitter 3 and adder 4 is not within the offset phase locked loop, but instead is placed **prior to the loop**.

As noted at page 14 of the present application, the "[e]mbodiments of the invention that were described in Figures 4-13 placed the quadrature modulator prior to the phase locked loop." (Specification, p. 14). As a result, "a modulated signal [is provided] to a phase locked loop in [the] phase tracking system." (Specification, p. 14). This, of course, is exactly what occurs in the apparatus of Wilson where the modulated signal provided at the output of adder 4 is limited and then provided to offset phase locked loop. In contrast to such implementation, the present application teaches that according "to other embodiments of the present invention that are described below in connection with Figures 14-22, modulation is applied within the phase locked loop itself." (Specification, p. 15). Specific locations where the modulator may be placed are shown in Fig. 16 of the present application. Item 1610 of Fig. 16 shows an implementation where the IQ modulator is placed "**prior to the phase locked loop** 1600 in a manner corresponding to Figures 4-13." (Specification, p. 16) (emphasis added). Item 1610 is in the same position as the modulator 2a, 2b, 3, 4 of Wilson. In contrast, items 1650, 1670 and 1690 of Fig. 16 of the present application illustrate three locations where the modulator is placed within the phase locked loop. (Specification, pp. 15-16). Wilson does not include any teaching or suggestion that the modulator could be placed at these locations or anywhere else within the phase locked loop. Thus, as Wilson does not, in fact, teach or suggest including the quadrature modulator within the phase locked loop, the rejections of Claims 10-19 and 28-36 should be withdrawn.

Applicants note that the Official Action rejects Claims 11 and 29 under 35 U.S.C. § 103(a) based on the combination of Wilson and Lampe. (Official Action, p. 12). In particular, the Official Action states that Lampe teaches "a quadrature modulator inserted in the feedback loop of a PLL" and that, as disclosed in the present application at page 16,

lines 31-34, "the positions of the modulators as claimed would produce the same result as appreciated by one of ordinary skill in the art." (Official Action, p. 12). Applicants respectfully submit, however, that the rejections of Claims 11 and 29 likewise cannot be sustained for at least three independent reasons.

First, as noted above, a rejection under Section 103(a) must be supported by clear and particular evidence as to why a skilled artisan would have been motivated to combine the references in the manner of the rejection. *See In re Dembiczak*, 50 USPQ2.d 1614, 1617 (Fed. Cir. 1999); *In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000). Here, no such evidence has been provided, nor could it be provided. Lampe discloses a "phase locked loop [that] incorporates a quadrature modulator for generating **constant** envelope phase or frequency modulation." (Lampe at Abstract) (emphasis added). In contrast, Wilson is directed to an "apparatus for producing a radio frequency signal with **non-constant** envelope modulation." (Wilson at Col. 1, lines 4-6) (emphasis added). It is respectfully submitted that one of skill in the art would not have been motivated to combine such disparate references in the manner suggested. More importantly, it is not even clear how the feedback loop of Lampe could be incorporated into the apparatus of Wilson to produce a working device. Applicants respectfully submit that if it is even possible, such a change would require substantial revisions to the circuit disclosed in Fig. 1 of Wilson.[1] The Official Action fails to show that such revisions would be possible, let alone that one of skill in the art would have been motivated to make them. As such, Applicants respectfully submit that the Official Action has not made a *prima facie* showing that the subject matter of Claims 11 or 29 would have been obvious to one of skill in the art.

Second, Wilson teaches that the "key advantage of the use" of the apparatus described therein is that it provides for very low noise since "the only noise generated by the modulator is the phase noise of the VCO." (Wilson at Col. 3, lines 21-27). Wilson notes that this is in contrast to conventional modulators which include additional noise

[1] By way of example, Wilson uses a differential amplifier 16 to reinstate the non-constant envelope modulation which is removed from the signal before the signal is passed to the offset phase locked loop. The Official Action does not identify how the differential amplifier circuit would have to be modified if the modulator of Wilson were moved from prior to the phase locked loop to within the phase locked loop.

components including "noise from a frequency up-converter." (*See* Wilson at Col. 3, lines 27-33). However, as noted in the Official Action, the feedback loop of Lampe includes a downconverter 305 that would contribute exactly the type of noise that the system of Wilson was seeking to eliminate. This serves as further evidence that one of skill in the art would not have been motivated to use the feedback loop of Lampe in the apparatus of Wilson as doing so would reintroduce one of the noise components that Wilson was seeking to eliminate.

Third, as noted above, the evidence of the teaching or suggestion to make the claimed combination must be found in the prior art, not in the applicant's disclosure. *See* M.P.E.P. § 2143. The Official Action states that one of skill in the art would have been motivated to modify the apparatus of Wilson to include the modulator in the feedback loop as disclosed in Lampe because "location of the quadrature modulator in the feedback loop would not have any operational impact on the apparatus in Wilson et al. invention." (Official Action, p. 12). However, as support for this statement the Official Action cites to page 16, lines 31-34 of **Applicants' disclosure** where Applicants' explain that the modulator may be located at various different positions while still providing the same output. Applicants' respectfully submit that such reliance on Applicants own disclosure is not permissible in support of a rejection under Section 103(a).

Thus, each of the above reasons provides an independent basis for withdrawal of the rejections of Claims 11 and 29.

III. The Abstract has been Amended

Applicants have amended the Abstract to delete the abstract title as required in the third paragraph of the Official Action.

IV. Conclusion

Applicants submit that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on April 21, 2004.

Michele P. McMahan

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Date of Signature: April 21, 2004